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14. ABSTRACT Since the advent of the airplane air warfare theorists, and arguably strategists, have often overstated or misrepresented the capabilities of air power. There is no doubt that air power has capabilities and advantages that far outweigh conventional naval and ground forces. The ability to strike at your enemy over great distances, with great accuracy and at speeds unattainable by conventional forces puts air power in a class all it's own. It has arguably redefined the definition of the center of mass. It can be inherently strategic in nature in that it often allows for an attack of the strategic or operational center of gravity without the confrontation of conventional naval and ground forces. <sup>1</sup> But, however swift and lethal air power may be, it is not above operational art application. Applying airpower to achieve aims vice objectives is at best a means of attaining ambiguous results and is a misuse of the capability. <sup>2</sup> Air power has had a long history of coercive attempts. "Success, if achieved, is thus likely to be as much the product of accident and good fortune as of design and skill." <sup>3</sup> The use of air power must have clear theater-strategic or operational objectives with quantifiable rates of progress and not immeasurable effects. <sup>4</sup> This lack of understanding can lead to the belief that air power alone, with it's many advantages over land and naval forces, can defeat the enemy; an erroneous conclusion that can only result in the unnecessary loss of personnel, material and time. <sup>5</sup>					
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**NAVAL WAR COLLEGE  
Newport, R.I.**

**COERCIVE EFFECTS-BASED OPERATIONS TARGETING ENEMY RESOLVE:  
NO BANG FOR THE BUCK**

**by**

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**A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.**

**The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.**

**Signature: \_\_\_\_\_**

**10 May 2007**

## **Abstract**

Since the advent of the airplane, air warfare theorists, and arguably strategists, have often overstated or misrepresented the capabilities of air power. There is no doubt that air power has capabilities and advantages that far outweigh conventional naval and ground forces. The ability to strike at your enemy over great distances, with great accuracy and at speeds unattainable by conventional forces puts air power in a class all its own. It has arguably redefined the definition of the center of mass. It can be inherently strategic in nature in that it often allows for an attack of the strategic or operational center of gravity without the confrontation of conventional naval and ground forces.<sup>1</sup> But, however swift and lethal air power may be, it is not above operational art application. Applying airpower to achieve aims vice objectives is at best a means of attaining ambiguous results and is a misuse of the capability.<sup>2</sup> Air power has had a long history of coercive attempts. “Success, if achieved, is thus likely to be as much the product of accident and good fortune as of design and skill.”<sup>3</sup> The use of air power must have clear theater-strategic or operational objectives with quantifiable rates of progress and not immeasurable effects.<sup>4</sup> This lack of understanding can lead to the belief that air power alone, with its many advantages over land and naval forces, can defeat the enemy will to fight; an erroneous conclusion that can only result in the unnecessary loss of personnel, material and time.<sup>5</sup>

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## ***Introduction***

Can air power alone legitimately target the resolve of our enemies' will to fight?

Even at theater-strategic or operational level of war, the issue of targeting the enemy's will to fight is very simply defined as the coercion of our enemy. A nation's ultimate strategic goal in warfare, no matter what medium is used, is to attack and defeat our enemy's strategic center of gravity (COG), its strength, while protecting its own COG. Proper understanding and application of operational art is imperative for a correct assessment and implementation. So why should not coercion, by means of air power, be affective if we apply operational art? The answer is as complex as the art of coercion itself. The problems are numerous but stem in large part from the issue of direct and indirect effects. Direct effects are tangible and measurable while indirect effects are often intangible and immeasurable.

Predicting direct first-order effects is difficult enough; going several steps farther to try to predict second-, third-, or fourth-order effects is a practical impossibility. There are simply too many variables. A slight change in the conditions of a single entity can generate unpredictable effects, desired and undesired.<sup>6</sup>

“At the strategic level, the degree and robustness of public support for the war, the leadership's will to persevere, and alliance or coalition cohesion cannot be satisfactorily quantified.”<sup>7</sup>

Coercive air power has been extensively employed in many theaters throughout the twentieth century and beyond. Arguably, desired coercive results were achieved in both the Bosnian air campaign, Operation DELIBERATE FORCE, in 1995 and later in Kosovo with Operation ALLIED FORCE in 1999. Some air power proponents argue that the surrender of the Japanese in 1945 was due to the employment of the world's first atomic bombs, the ultimate example of air warfare successfully acting alone to coerce an enemy. Air warfare

proponents believe strongly that air power alone can strategically project force more rapidly, accurately, overwhelmingly, with less risk, and ultimately less cost than when compared to land and naval power; and has ultimately redefined the concentration of mass, allowing for effects-based operations rather than objectives-based operations only.

However, there are plenty of examples of where coercive air power arguably failed, countering these beliefs. “In the American air bombing of North Vietnam from February 1965 to October 1968 (Operation ROLLING THUNDER), there was a disconnect between predicted and actual effects, indicators, measures, analysis, and feedback.”<sup>8</sup> The same could be argued for the German Firebombing of London in 1940 or even the Allied bombing of Germany from 1942 to 1945. The intended effects were proven in the end, to be unpredictable and these operations ultimately failed because of this lack of understanding.

As we move further into the future and technology broadens our ability to define the concentration of mass, it is imperative that we understand our strategic limitations when striking our enemy. This paper will examine and highlight the need for air warfare strategists to better understand coercive air strikes and the difference between direct and indirect effects at the theater-strategic and operational level of war. Lacking a full understanding of all aspects involved could lead to incorrect application of airpower that can only result in unintentional consequences and the unnecessary loss of personnel, material and time.<sup>9</sup>

***Background: Evolution of airpower theorists, theories, and doctrine.***

Since the advent of the airplane and air warfare, proponents of airpower have had some remarkable insight into the possibilities of its potential. Some of these theories were progressive and continue to be relevant. Other theories have, over time, become outdated

and yet others are at the center of much confusion and debate. Air power theorists and strategists have often misapplied or overstated some of the abilities of air power.

The first air warfare theorist to perhaps come to mind is also the first one to develop theories on air warfare and is commonly known as the “Father of Air Warfare theory.”

General Giulio Douhet was an Italian infantry officer who was assigned to a general staff in 1911 when he first wrote about air warfare theory. Douhet was a strong proponent of the airplane and believed that this medium had completely changed the face of warfare. His observations, although originally strongly contested, eventually proved to be extremely perceptive considering his background and the relative inexperience that nations had with this new medium.

Some of Douhet’s many theories eventually were discounted, but others remain undisputed even today. His insight into strategic bombing was, and still is, accurate. “The first goal of strategic bombardment is to gain command of the air. Until achieving that goal, one’s own population will have to accept enemy bombardment.”<sup>10</sup> To add to this he theorized, “To have command of the air means to be in a position to prevent the enemy from flying while retaining the ability to fly oneself.”<sup>11</sup> As insightful and progressive as his theories on air warfare were at the time, none was more arguably controversial than his theory that “civilian morale can be diminished by direct attack.”<sup>12</sup> He believed strongly that air power could:

destroy the enemy's will to resist by conducting aerial bombing on cities, industrial centers and more importantly, civilian population. It was thought that civilians were not prepared for the effects of war and the bombing of population centers would create panic among the people. People would then pressure the government to negotiate for peace.<sup>13</sup>

This particular theory was a belief in the coercive use of air power and, more importantly, was an attempt to predict an indirect and often immeasurable effect.

Hugh Montague Trenchard is considered the father of the Royal Air Force. More importantly, he is also recognized as the first to advocate the use of strategic bombing.

He entered the army in 1893 and served in the South African War. During World War I he commanded the Royal Flying Corps. As chief of air staff (1918, 1919–29), Trenchard shaped the offensive air strategy that the Royal Air Force adhered to into World War II.<sup>14</sup>

Trenchard was a strong advocate of Douhet and, like Douhet, believed in the power of strategic bombing for use in coercion. However, basing a military theory on targeting civilians posed moral and ethical questions. Douhet had noted that “humanity and civilization may avert their eyes in thinking about bombing civilians.”<sup>15</sup> But British theorists like Hugh Trenchard knew that in the “modern democratic world, a nation went to war on behalf of its citizens, not a king or emperor.”<sup>16</sup>

Trenchard, along with other British theorists such as James Molony Spaight, defined the target as “the sovereign people who war, and it is their nerve and morale which must be broken.”<sup>17</sup> Trenchard claimed that civilians “are not disciplined and it can not be expected that they will stick stolidly to their lathes and benches.”<sup>18</sup> “A bombing campaign would be as much a psychological as a physical battle.”<sup>19</sup> Trenchard claimed to have studied the effects of British bombing attacks on towns in Germany and “estimated that the psychological damage was twenty times greater than the material. And interestingly, living under the threat of an attack was as damaging to civilian morale as an actual attack.”<sup>20</sup>

“BGEN William ‘Billy’ Mitchell was the first prominent American to publicly speak about his vision of strategic airpower that would dominate future war. He believed that aircraft were inherently offensive and were strategic weapons that revolutionized war by



allowing a direct attack on the "vital centers" of an enemy country."<sup>21</sup> He is also seen as Hugh Trenchard's counter part in America in that he is considered the father of the United States Air Force. In fact, Mitchell recognized Hugh Trenchard's expertise in the principles of air power and sought out his guidance. The two would go on to share a mutual admiration for each other based on their similar beliefs in air power theory.

It is interesting to note that although Mitchell was a strong advocate of the theories of both Douhet and Trenchard, there is no evidence directly indicating Mitchell's support of attacking civilian morale or the will to fight. Instead, it appears as if Mitchell recognized the need for the targeting of tangible objectives vice indirect effects. "Aviation depends for its action on a concentration of power at the decisive point."<sup>22</sup> "Air power can attack the vital centers of the opposing country directly, completely destroying and paralyzing them."<sup>23</sup> Mitchell defined these vital centers as "the mighty industrial areas that produced the vast amount of armaments and equipment so necessary in modern war"<sup>24</sup> and not civilian resolve or morale as both Douhet and Trenchard supported.

Why is there a disconnect between Mitchell and two of his greatest influences? What did Mitchell perceive differently that brought about the divergence in his strategic theories from others? The answer, in all probability, is that Mitchell understood the limits of targeting indirect effects. Even current Air Force doctrine appears to be incomplete in addressing direct and indirect effects of attempted coercion. According to "Strategic Attack" Air Force Doctrine Document (AFDD) 2-1.2, 30 September 2003:

To force capitulation or other favorable changes in adversary behavior, we must affect that leadership—either by attacking them directly or by affecting their will to fight, often through effects upon the psychology of the state, group, or system it controls.<sup>25</sup>

### *Analysis of Coercive Air Power*

Coercion is not new to military operations. There are numerous examples of “states that have repeatedly employed [air power] in an attempt to persuade other states to do their bidding.”<sup>26</sup> What is important to take away from these examples is not the attempt to coerce our enemy but rather the manner with which it was attempted and subsequent results.

“There are four main categories of coercive air strategies. These are punishment, risk, denial, and decapitation.”<sup>27</sup> Any one of these strategies may be employed by itself or in conjunction with one or all of the others. Key to coercive air strategies is the need for established air superiority, a maxim recognized by all the air power theorists.

“Aerial *punishment* attempts to inflict enough pain on enemy civilians to overwhelm their territorial interests in the dispute and to cause either the government to concede or the population to revolt against the government.”<sup>28</sup> Air power can directly attack population centers causing tremendous pain or indirectly target population centers by destroying the civilian infrastructure and economy. “Turning the lights off” is a classic attempt to indirectly influence the populace. Douhet and Trenchard advocated this approach.

The Douhet model rests on the belief that infliction of high [punishment] costs can shatter civilian morale, unraveling the social basis for resistance, so that citizens pressure the government to abandon its territorial ambitions.<sup>29</sup>

The U.S. Air Corps Tactical School (ACTS) in World War II advocated this as well. The ACTS doctrinal guide, *The Aim in War* stated: “The ultimate objective of all military operations, then, is to destroy the will of the people at home, for that is the real source of the enemy’s national policy.”<sup>30</sup> This objective, however, was an indirect effect as their explanation on how to achieve this was by attacking the enemy’s national economic structure.

*Risk* (or the theory of coercion by means of the manipulation of risk) was developed by a social scientist named Thomas Schelling in the decades following World War II in his book entitled *Arms and Influence*. “The heart of this strategy is to raise the risk of civilian damage gradually, compelling the opponent to concede [in order] to avoid suffering future costs.”<sup>31</sup> Once again, like the Douhet model:

The Schelling model focuses on population and economic targets. Civilian punishment can be inflicted both directly by killing large numbers and indirectly by destroying economic infrastructure, depriving the population of essential goods and services.<sup>32</sup>

Generally speaking, more important than the punishment itself was the threat or expectation of more punishment that coerced the enemy.

“Using air power for *denial* entails smashing enemy military forces, [thus] weakening them to a point where friendly ground forces can seize disputed territories without suffering unacceptable losses.”<sup>33</sup> There are basically three different types of denial strategy. The first is the direct support of ground forces, a commonly used and easily understandable method. Second is “Strategic Interdiction,” commonly used to attack and “destroy...military production or to isolate them from combat theaters or fronts,”<sup>34</sup> thereby decreasing the availability of weapons of war to the enemy. This type of coercion could be broken down further into two separate categories. The targeting of components early in the military production cycle, referred to as “critical components” or semifinished products and the “system wide” interdiction strategy or the targeting of everything from raw materials to finished products and even modes of supply.<sup>35</sup>

The *decapitation* strategy is a relatively new strategy developed by Colonel John A. Warden III, USAF, and brought about by the advent of precision guided munitions and more accurate intelligence. These strikes are used against key leadership and telecommunications

facilities. The main assumption is that if the leadership is knocked out, the whole house of cards comes down.<sup>36</sup> Once again, like the denial strategy, there are several variants to this method. “The first is leadership decapitation, seeking to kill specific leaders on the assumption that they are the driving force behind the war.”<sup>37</sup> The second form of this coercion is one that continues to be a source of debate. Decapitation “to create circumstances in which local groups overthrow the government, either by popular revolt or coup.”<sup>38</sup> This is clearly an attempt to target an aim with the expectation of an indirect effect and is very similar to the intent of the punishment strategy. “To date, decapitation has never toppled a government.”<sup>39</sup> Another hotly contested decapitation theory is the attempt to attack a national military headquarters in theater. This theory was a natural progression in the belief that if an attack of a military headquarters caused operational paralysis, then an attack of a national military headquarters should cause strategic paralysis.<sup>40</sup> It is widely believed, however, that strategic paralysis is virtually impossible.<sup>41</sup>

The effects of each of these widely accepted methods of air power coercion can be furthered categorized by current air force doctrine as:

collateral (“unintended”), sequential, parallel, cumulative, or cascading. These relate to how the effects in question are imposed upon the enemy. Collateral effects are unintended outcomes, which may have a positive or negative impact on friendly operations. Counterforce operations impose effects sequentially—one after another in series—and cumulatively—through the aggregation of many smaller direct and indirect effects. Strategic attack can be used to help impose parallel effects—those planned to occur at or near the same time, to maximize systemic shock—and cascading effects—those that ripple through a system, degrading or affecting other systems related to them. Cumulative and sequential effects may achieve victory, but generally at a higher cost (in many senses) than parallel and cascading effects.<sup>42</sup>

By this definition it appears that even current Air Force doctrine attempts to predict second, third, or fourth order effects at the strategic and operational level. AFDD 2-1.2 goes on to state that:

Effects can be further categorized as physical, systemic (functional), or psychological. Direct effects are most often purely physical. Systemic effects describe how the behavior of a system is changed by action against it. Psychological effects influence the emotions, motivations, or reasoning of individuals, groups, or polities, and are usually conveyed by changes in behavior. Systemic and psychological effects are by nature almost always indirect, but some forms of strategic attack, like certain information operations (IO), may have systemic or even psychological effects directly.<sup>43</sup>

### ***Historical Accounts of Coercive Air Power***

As mentioned earlier, there are many examples in history of states trying to coerce each other through air power by the aforementioned methods. What may be perceived as the most successful use of air power coercion came about in World War II with the surrender of Japan. The majority of military historians believed the Japanese COG at the time was the will of the elite Japanese leadership. However, the United States' attempt to coerce the Japanese leadership was by an indirect means, attacking the civilian populace in order to generate an effect on the elite. "Indeed, Japan's surrender represented a rare instance in which a great power surrendered its entire national territory to an opponent that had not captured any significant portion of it."<sup>44</sup> It is very hard to argue with success. The acceptance of surrender came relatively quickly after the dropping of the atomic bomb on Hiroshima.

However, there were a number of other very important and, albeit, less dramatic factors at play during this time as well. It has been argued that one of the most important factors was that the Soviets had attacked Manchuria only three days after Hiroshima (the

same day as Nagasaki was bombed) and Japanese leadership realized that the Kwantung army would soon be overrun.<sup>45</sup> “In comparison, the atomic bomb had little or no effect on the Japanese Army’s position.”<sup>46</sup> Admiral Toyoda, Chief of the Naval General staff said, “I believe the Russian participation in the war rather than the bombs did more to hasten the surrender.”<sup>47</sup> “Thus for the final acceptance of surrender by the Japanese civilian elite, it is impossible to determine whether military or civilian vulnerability had the greatest impact.”<sup>48</sup> Terror bombings, however successful they are in creating terror and destruction, are not necessarily effective in coercing governments. It is believed that a successful coercion depends on a threat to capture territory. Only the prospect of a successful invasion of Japan brought about their surrender.<sup>49</sup>

The Korean War was yet another attempt to influence leadership through the direct attack on civilian morale. A *punishment* strategy to weaken the North Korean civilian morale failed primarily because both China and Korea were willing to countenance great civilian loss to achieve their goals.<sup>50</sup> States that often lack a constitutive process or suppress their civilian representation are often immune to the effects of attacks on civilian morale. “The air campaigns of the Korean War support the proposition that conventional coercion is not a function of civilian vulnerability.”<sup>51</sup> Eventually coercing China and the North Koreans to concede the future presence of United States forces in South Korea, as well as the movement of the inter-Korean boundary and the repatriation of prisoners of war, was arguably gained through a threat of nuclear warfare.<sup>52</sup> “Despite several attempts to use air power to attack civilian morale, there is no evidence that any coercive leverage was generated.”<sup>53</sup>

In the Vietnam air war between February 1965 and October 1968, Operation ROLLING THUNDER attempted several different coercion techniques. In the end they all eventually failed but the most notable failure was a type of genteel Douhet-like strategy (*punishment*) employed to affect the civilian morale. It was an attempt to raise the “cost” North Vietnam was willing to pay to a prohibitive level.<sup>54</sup> However, in this strategy the United States did not directly attack civilians. Instead, it attacked the industry and infrastructure in order to affect civilian morale. In the end this strategy added little cost to the North Vietnamese for several reasons. The extremely small Vietnamese industry was subsidized almost entirely by communist allies; most of the populace lived in the rural country-side and were unaffected by attacks on infrastructure; and most importantly, this strategy did not directly attack civilians. Accurately predicting these second and third order effects was a complete failure of the U.S. administration at that time.

An interesting shift in strategy occurred during the Gulf War in 1991 with Operation DESERT STORM. The Iraqi invasion of Kuwait began in 1990 following the accusations by Saddam Hussein that Kuwait was overproducing oil and stealing oil from Iraqi oil fields. The United States and a coalition of thirty countries launched a massive air operation to remove Iraqi forces from Kuwait. This marked the first time in a major conflict where a Douhet-like strategy of attacking the civilians’ will to fight (*punishment*) was not employed in any fashion. Instead, allied commanders opted for a combination of denial and decapitation methods.<sup>55</sup> Operation DESERT STORM’s air war was so successful that some strategists began to theorize that air power alone could decide international disputes. However, “in the end air power did succeed in coercing Iraq to withdrawal from Kuwait, but it did so by undermining its ability to defend against the coalition’s ground threat.”<sup>56</sup>

Successful achievement of this operational objective was possible because the coalition directly attacked the Iraqi operational COG, the Iraqi Republican Guard, and their expected result was a first order success.

In direct comparison to the Gulf War and Operation DESERT STORM, was the North Atlantic Treaty Organization (NATO) Bombing of Yugoslavia in 1999 with Operation ALLIED FORCE. The coercive method employed by NATO Forces throughout the operation was the combination of *punishment* and *risk* or more specifically, the Schelling method.<sup>57</sup> The target of the attacks was the civilian populace. Here we have an indirect attack on the strategic center of gravity (Milosevic) by targeting the will of the people or the civilian morale. Initially, Serbian citizens were completely unaffected by the bombings. NATO rules of engagement would only allow certain targets to be engaged, and the civilian populace was never allowed to be directly attacked. Instead, NATO forces attacked the infrastructure, slowly and methodically turning out the lights on the civilian populace.

By the end of the air campaign, the Serbian citizens and politicians who had initially overwhelmingly opposed giving in to NATO's demands had increasingly come to the view that Milosevic had to make whatever concessions were necessary to get the air attacks stopped.<sup>58</sup>

Milosevic eventually came to believe that NATO's future air attacks would be unconstrained and calculated and that "the public would neither long tolerate nor forgive him for the hardships that would result from such intensified bombing."<sup>59</sup>

Even though Serbia's isolation due to lack of support from Russia played a large part in capitulation, it was "NATO's air power and the future threat it posed [on the civilian resolve] that most influenced the eventual decision to come to terms."<sup>60</sup> Early in the operation President Clinton made it very clear that he would not be committing major land



forces and therefore, NATO's feeble attempts to bluff Serbia into a possible NATO invasion force fell flat. Was it air power alone that achieved this victory? "In this sense, the NATO war does merit Secretary of Defense Cohen's description of it as "the most precise application of air power in history."<sup>61</sup> However, air power should not be viewed in a vacuum. There were considerable political efforts at play during this operation, and it should be obvious that air power is only one part of the total military and diplomatic equation when applying coercive techniques. "Mastering the techniques of coercion is not a substitute for effective foreign policy."<sup>62</sup>

### ***Conclusion***

With the exception of the bombing of Yugoslavia in 1999 with Operation ALLIED FORCE, history has proven again and again that General Giulio Douhet and theorists like him may have overstated the capabilities of air attacks or misunderstood their target when predicting what effects, not objectives, are achievable through air power. Given Douhet's relative inexperience in air warfare, this is certainly understandable. However, current strategists and planners cannot be so easily excused in light of the years of corporate knowledge they have at their disposal.

This means of targeting for effect has come to be known as Effects Based Operations (EBO). The United States Joint Forces Command (USJFCOM), by means of the Joint War Fighting Center (JWFC) doctrine, uses this working definition of EBO:

Operations that are planned, executed, assessed, and adapted based on a holistic understanding of the operational environment in order to influence or change system behavior or capabilities using the integrated application of selected instruments of power to achieve directed policy aims.<sup>63</sup>

Key terms within this definition are further defined in the JWFC doctrine as:

- “An *effect* is the physical and/or behavioral state of a...system that results from a military or nonmilitary action or set of actions.
- A *system* is a functional, physical, and/or behavioral related group of elements that interact together as a whole.”<sup>64</sup>

In direct comparison to this operation is the more widely used and understood objectives based operation where “one of the most important tenants of this strategy is having an unwavering focus on accomplishing the objective.”<sup>65</sup> “In contrast to the objective and tasks, effects are far less specific and they cannot serve as the basis for military planning and execution.”<sup>66</sup> There can be an untold number of unpredictable variables when targeting a second order effect like the resolve of the populace. Predicting a second order effect after striking an objective is a practical impossibility. A slight change in the conditions of a single entity can generate unpredictable effects, desired and undesired.<sup>67</sup>

Operation ALLIED FORCE makes an impressive argument for this strategy. However, one successful operation does not necessarily validate a strategy or tactic. There are certainly plenty of examples in history where air power, targeting for an effect, has failed. “Success, if achieved, is thus likely to be as much the product of accident and good fortune as of design and skill.”<sup>68</sup>

From the inception of this air warfare theory in World War I to application in World War II, through the Cold War and beyond, “operations have been significantly more complex when targeting for an effects-based approach at the operational and strategic levels of war.”<sup>69</sup> Commanders and operational planners must be aware that targeting immeasurable effects has a strong possibility of rendering ambiguous or an unsuccessful outcome if continued.

## ***Recommendations***

Military and civilian reaction can not be categorized in a specific fashion. “The enemy has his own will and may not behave as one wishes. He is bound to respond to one’s actions. He can react unpredictably and irrationally.”<sup>70</sup>

“Based on common sense alone, it is hard to see the value of placing inherently ambiguous effects between far more specific and measurable objectives and tasks.”<sup>71</sup> It is my recommendation that planners and operational commanders give considerable forethought or entertain complete cessation of using enemy or friendly critical weaknesses or vulnerabilities as a strategic or operational center of gravity. A center of gravity will never be a critical weakness or vulnerability. “Nor is it found among those critical strengths that lack the ability to physically or otherwise endanger the enemy’s center of gravity,”<sup>72</sup> such as the will of the enemy.

More importantly, it is imperative that operational and theater-strategic planners understand, at the very least, there are a tremendous number of factors influencing an outcome when trying to target specific effects, such as the enemy’s will to fight. Intended and unintended messages often initiated by action or inaction by either side can be easily misread, adding to an already ambiguous and uncontrollable effect. If we then add into the equation a lack of cultural awareness and understanding of sociological and economic issues, we can then start to see the tip of the iceberg and grasp how this process of predicting even first order effects is extremely unreliable and/or unattainable, and desired second and third order effects completely unpredictable or opposite of what is desired.

Air power remains a lethal force that can bring immense theater-strategic and operational capabilities to a theater. However technologically advanced and capable it is, air

power alone is not able to force the enemy to react as planners expect. When planners consider strategic and operational targeting for effect, they must consider that the enemy's reactions are never completely predictable and, in some instances, results may become counterproductive.

## NOTES

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<sup>1</sup> Phillip S. Melinger, "Ten Propositions Regarding Air Power" *Airpower Journal*, (Spring 1996), 54.

<sup>2</sup> Milan N. Vego, "Effects Based Operations: A critique," *Joint Forces Quarterly* 41, (2<sup>nd</sup> quarter 2006), 52.

<sup>3</sup> Wallace Theis, When Governments Collide: Coercion and Diplomacy in the Vietnam Conflict (Berkley, CA: Univ. of California Press, 1980), 399.

<sup>4</sup> Vego, "Effects Based Operations: A critique," 52.

<sup>5</sup> Milan N. Vego, Operational Warfare (Newport, RI: Naval War College, 2000), 309.

<sup>6</sup> Vego, "Effects Based Operations: A critique," 52

<sup>7</sup> Ibid., 53.

<sup>8</sup> Ibid.

<sup>9</sup> Vego, Operational Warfare, 309.

<sup>10</sup> Giulio Douhet, The Command of the Air, (Washington DC: Office of Air Force History 1983), 142.

<sup>11</sup> Ibid., 24.

<sup>12</sup> Ibid., 58.

<sup>13</sup> Alf Wilkinson, *Bomber Theory: Air Power Between Two World Wars*, Available at <http://www.sparticus.schoolnet.co.uk/avbombertheory.htm> (accessed 3 April 2007).

<sup>14</sup> The Columbia Encyclopedia, Sixth Edition, (2001-05), Available at <http://www.bartelby.com/65/tr/Trenchar.html> (accessed 8 April 2007)

<sup>15</sup> Pamela Feltus, *The Prophets: Advocates of Strategic Bombing*, Available at [http://www.centennialofflight.gov/essay/Air\\_Power/Prophets/AP11.htm](http://www.centennialofflight.gov/essay/Air_Power/Prophets/AP11.htm) (accessed 7 April 2007)

<sup>16</sup> Ibid.

<sup>17</sup> Ibid.

<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

<sup>20</sup> Ibid.

<sup>21</sup> Philip S. Meilinger, Airman and Air Theory: A Review of the Sources, (Maxwell, AL: Air University Press 2001), 9.

<sup>22</sup> Johnny R. Jones, Fundamental Truths of Air Power, (Maxwell, AL: Airpower Research Institute, College of Aerospace Doctrine, Research, and Education, 1997), 9.

<sup>23</sup> Ibid., 6.

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<sup>24</sup> Ibid., 7.

<sup>25</sup> United States Air Force, Strategic Attack, (Maxwell, AL: Air Force Doctrine Document 2-1.2, 2000), 2.

<sup>26</sup> Robert A. Pape, Bombing to Win: Air Power and Coercion in War, (Ithaca NY: Cornell University Press, 1996), 1.

<sup>27</sup> Ibid., 58.

<sup>28</sup> Ibid., 59.

<sup>29</sup> Ibid., 60.

<sup>30</sup> Ibid., 63.

<sup>31</sup> Ibid., 67.

<sup>32</sup> Ibid.

<sup>33</sup> Ibid., 69.

<sup>34</sup> Ibid., 71.

<sup>35</sup> Ibid., 71, 72.

<sup>36</sup> Ibid., 79.

<sup>37</sup> Ibid., 80.

<sup>38</sup> Ibid., 82.

<sup>39</sup> Ibid.

<sup>40</sup> Ibid., 84.

<sup>41</sup> Ibid.

<sup>42</sup> United States Air Force, Strategic Attack, 9.

<sup>43</sup> Ibid.

<sup>44</sup> Pape, Bombing to Win: Air Power and Coercion in War, 87.

<sup>45</sup> Most historians believe that the Soviet Army entered the Pacific campaign in order to lay claim to territorial interests in the region, most notably - China. After the United States dropped the first atomic bomb on Hiroshima, the Soviets, having already planned for an invasion months before, seized the opportunity to enter the Pacific war by attacking Manchuria. The dropping of the atomic bombs were meant to coerce the Japanese elite by increasing the “cost” of civilian death to a prohibitive level. In reality, the Japanese elite were far more concerned about their armies and their ability to defend from an invasion than their populace and in the end, the dropping of the atomic bomb was more of a catalyst than a direct effect.

<sup>46</sup> Pape, Bombing to Win: Air Power and Coercion in War, 124.

<sup>47</sup> John Toland, The Rising Sun: The Decline and Fall of the Japanese Empire, (New York, NY: Random House, 1970), 807.

<sup>48</sup> Pape, Bombing to Win: Air Power and Coercion in War, 121.

<sup>49</sup> Ibid., 127.

<sup>50</sup> Ibid., 151.

<sup>51</sup> Ibid., 173.

<sup>52</sup> Ibid., 151.

<sup>53</sup> Ibid., 173.

<sup>54</sup> Ibid., 180.

<sup>55</sup> Ibid., 212.

<sup>56</sup> Ibid., 211.

<sup>57</sup> Stephen T. Hosmer, The Conflict Over Kosovo: Why Milosevic Decided to Settle When He Did, (Santa Monica, CA: Rand, 2001), 123-138.

<sup>58</sup> Ibid., 123.

<sup>59</sup> Ibid., 124.

<sup>60</sup> Ibid., 123.

<sup>61</sup> Andrew J. Bacevich and Eliot A. Cohen, War Over Kosovo: Politics and Strategy in a Global Age, (Chichester, NY: Columbia University Press, 2001), 28.

<sup>62</sup> Theis, When Governments Collide: Coercion and diplomacy in the Vietnam Conflict, 415.

<sup>63</sup> United States Joint Forces Command, Operational Implications of Effects-based Operations (EBO), The Joint Warfighting Center, Joint Doctrine Series, Pamphlet 7, 2004.

<sup>64</sup> Ibid.

<sup>65</sup> Vego, "Effects Based Operations: A critique," 52.

<sup>66</sup> Ibid.

<sup>67</sup> Ibid.

<sup>68</sup> Theis, When Governments Collide: Coercion and diplomacy in the Vietnam Conflict, 399.

<sup>69</sup> Vego, "Effects Based Operations: A critique", 56.

<sup>70</sup> Ibid., 54.

<sup>71</sup> Ibid., 57.

<sup>72</sup> Ibid., 55.

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